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SUITCASE

- 3 This invention relates to the construction of luggage such as suitcases for use by travellers.

Many constructions of suitcases for use by travellers are known. These known constructions are of varied form and not infrequently include at least a pair of wheels/rolls for facilitating the movement of the case by a user.

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In addition, it is also known to provide suitcases incorporating a towing handle structure which is usually moveable between a user case towing position and a retracted stowage position.

- 10 Suitcases, can conveniently be considered as comprising two major types, the first the so-called soft case and the second the so-called hard case.

The soft case conventionally incorporates a metal or plastics framework which provides the means whereby the required shape and visual appearance of the case is maintained and also serves to support a soft outer covering.

- 15 The above mentioned hard skinned cases are regarded as being hard skinned in the sense that the walls, top and bottom are so moulded or otherwise pre-formed as to provide a substantially rigid or hard skinned in the sense that the walls, top and bottom are formed by a material that sufficiently rigid in that it retains its shape and form in use. A material commonly used for forming hard skinned cases is a polypropylene.

- 20 Such cases comprise two rigid shells that are hinged one to the other with purpose built hinges and which meet with an inter-nesting tongue and groove frame-like formation. Mechanical fasteners such as hinged locks are used to retain the lid portion and the base portion in their closed positions.

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Conventionally the so-called 'hard' cases incorporate a metal or plastics framework extending all around the internal perimeter of the case in such position as to provide structural strength to the case and additionally to ensure that any internal tongue and groove arrangements will always nest one relative to the
5 other.

Bearing in mind that many present day modes of travel, i.e., by aircraft, coach etc. impose a weight limit upon the amount of luggage an individual passenger may carry it has been found that whilst the known hard case constructions afford a considerably higher degree of security and resistance to damage the extra weight
10 of the case imposes considerable limitations upon the actual weight of articles that may be introduced into the case.

On the other hand whilst the lighter weight of the soft case allows more articles to be packed into the case weight for weight the lesser security afforded by the soft case constructions against damage deliberate or otherwise introduces
15 unacceptable content security problems for the traveller.

It is an object of the present invention to inter alia a 'hard' suitcase construction that avoids at least some of the problems arising from the use of the known construction of hard and soft type cases.

For the purposes of the present Application a 'hard' case is regarded as being
20 such by reason of the fact that the top, bottom and side and end walls cannot readily be pierced by a blade or needle as is the case with known soft case constructions.

A further object is the provision of a suitcase whose appearance departs from that of a purely standard rectangular block like formation for a suitcase.

Broadly according to a first aspect of the invention there is provided a method of constructing a hard suitcase including forming a shaped base portion and a shaped lid portion from a plastics material of such characteristic that the portions retain their intended shape, and attaching to each of said portions the respective zipped portions of a zip fastener arrangement by a stitching operation involving a securing thread.

5 A further aspect of the invention provides a method of constructing a frame less 'hard' suitcase characterised by the steps of forming a base portion and a lid portion from a material of such characteristic that the portions retain their formed shape, and attaching to each of said portions the respective zipped portions of a zip fastener arrangement by a stitching operation involving a securing thread.

A further aspect of the invention there is provided a method of constructing a frame less 'hard' curvilinear suitcase characterised by the steps of forming a tray like base portion and a tray like lid portion from a material of such characteristics that the base and lid portions retain their intended curvilinear shape, and attaching to the free edge regions of the walls of said tray like portions by a stitching operation using a thread the respective fastener forming sections of a zip fastener arrangement for enabling the base and lid portions to be retained in a suitcase closed condition.

15 20 In accordance with a still further aspect of the invention there is provided a method of constructing a suitcase incorporating a capability of increasing the storage volume of the case.

25 Preferably a means, for enabling said increase in the closed volume of the suitcase includes a Zip fastener arrangement.

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Conveniently the zip fastener arrangement is a two part Zip fastener arrangement of which a first Zip part In accordance with a second aspect of the invention there is provided a method of constructing a hard suitcase including forming a base portion and a lid portion from a material of such characteristic that the portions 5 retain their formed shape, and attaching to each of said portions the respective zipped portions of a zip fastener arrangement by a stitching operation involving a securing thread.

In accordance with a further aspect of the invention there is provided a method of constructing a suitcase including forming a tray like base portion and a tray like 10 lid portion from a material of such characteristic that the portions retain their formed shape, and attaching to each of said portions the respective zipped sections of a zip fastener arrangement by a stitching operation involving a securing thread, the Zip fastener arrangement being such as to enable the suitcase to be retained in a closed condition, and incorporating means for enabling 15 increase in the storage volume of the closed suitcase.

Preferably a suitcase is provided with two sets of floor engaging support members, there being a set being provided one to each of two transverse surfaces of the suitcase whereby the case can be stood on a support surface in one or the other of two orientations.

- 20 In a preferred construction two of the elements of one such set are provided upon the bottom portion and incorporate wheels/rolls whereby the case is rendered towable, and in which at least one other element of this set is located on the lid portion, the arrangement being such as to provided a stable support for the case when not being towed.
- 25 In a preferred construction that side of the base portion that is opposite to the wheels/rolls is provided with a case carrying handle and a retractable towing means..

Preferably, two elements of the second such set are provided upon a longer side wall of the base portion and two further elements of this set are provided upon a corresponding wall of the lid portion, the arrangement being such that the case when resting on the elements of this set is stable, and wherein a carrying handle is 5 provided on the side of the bottom portion that is opposite to the side with said elements.

In a further preferred construction the case incorporates means whereby the volume of the case is expandable.

Conveniently, the expandability is achieved by providing a two part Zip fastener 10 arrangement of which a first Zip part is associated with the closing of the case and of which a second Zip part is associated with the expandability of the case.

Preferably, the second Zip part is interposed between the lid section of the case and the portion of the Zip fastener arrangement associated with the closure of the case.

- 15 Conveniently, the second Zip part includes a first section attached to the case and additionally along the peripheral edge of a strip of flexible material circumscribing the mouth of the lid portion and attached thereto, and a second section that is attached to the peripheral edge of the strip of material that is remote from the case lid portion.
- 20 For a better understanding of the invention and to show how to carry the same into effect reference will now be made to the accompanying drawings in which:-

Figure 1 is a view of the carrying handle side of a first embodiment of a solid skinned suitcase case incorporating the concepts of the invention;

Figure 2 is a view of the opposite side to carrying handle side of a solid skinned suitcase case shown in Figure 1;

Figure 3 is a top view of the suitcase as shown in Figures 1 and 2;

Figure 4 is a bottom view of the suitcase as shown in Figures 1 and 2;

5 Figure 5 is a face view of the suitcase shown in Figures 1 to 4;

Figure 6 is a face view of the opposite side of the case as shown in Figure 5;

Figure 7 is a side view of a second embodiment of a suitcase which is volume wise expandable the Figure illustrating the suitcase when unexpanded;

Figure 8 is a side view of the suitcase of Figure 7 when the suitcase is expanded

10 and;

Figure 9 is a cross sectional view of a detail of the suitcase construction to an enlarged scale.

Referring to the drawings. the suitcase shown therein includes a main body or base portion 1 and a lid portion 2. Both the base portion and the lid portion are 15 formed from a plastics material of such nature that the portions are self supporting and at the same time are capable of being stitched to a Zip fastener arrangement as will be discussed hereinafter.

In a particular construction the material used for the lid and base portions is a mixture of polycarbonate material with an Acrylic Butyl Styrene (ABS) plastics of 20 the kind conventionally used for hard side framed luggage.

As seen in orientation of the suitcase as shown in Figures 1 to 4 the base portion 1 includes a bottom main surface 3, longer side walls 4 and 5, and shorter side walls 6 and 7.

Also as seen the Figures 1 and 2 the lid portion 1 can be regarded as including a top main surface 8, side walls 9 and 10 and smoothly curved regions 11 and 12 that can be regarded as forming the remaining walls of the lid portion.

Since the lid and base portions are intended to connect one with the other when the suitcase is closed, as is shown in the Figures, the main body portion 1 and the lid portion 2 are respectfully formed with complementary profiled stiffening ribs 13 and 14 respectively.

In the embodiment of the suitcase as shown in the Figures the lid portion is pivotally secured to the base portion by hinging arrangement schematically shown at (Figure 4) and is maintained in its closed position by a circumscribing Zip fastener arrangement 16 including two operating members 17 which can be set to allow the lid portion 2 to be pivoted to an open position and when the two operating elements are moved to the positions shown in the Figure 3 the lid section is held in its closed position as shown. In practice these members 17 can be such as to accept the hapse of a lock that prevents separation of the members when the lock is in place.

The Zip fastener arrangement 16 includes conventional Zip toothed strips/sections 16A and 16B that are connected to the stiffening ribs regions of the base portion and the lid portion by machine stitching. The mode of securing the Zip fastener arrangement to the lid and base sections will be considered in more detail herein after. For the present it will be noted that the provision of the Zip fastener arrangement 16 with its toothed strips/sections 16A and 16B and operating members 17 mounted to the base and lid portions affords an all round closure to

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the case whilst at the same time eliminating the need for a tongue and grove engagement region between the lid and base portions and mechanical closures such as locks.

The suitcase incorporates a user towing facility. Thus the suitcase is provided at
5 two corners of the base portion with wheel mounting units 18. As can be seen from Figure 4 the units each include a shaped housing 18 that is secured to the suitcase corners. In the case of each housing 18 a wheel 19 is suitably mounted in the housing 18 such that the wheel projects rearwards and downwards of the base portion 1.

10 A towing handle assembly 20 is provided in the base portion 1. This handle assembly is housed within the structure of the base portion so that when not in use its is retractable into an effectively concealed position. Thus the base portion is moulded with suitable recess for accommodating the handle assembly.

In use the handle is pulled upwardly (as indicated in the Figures) to a fully
15 extended user position.

A first suitcase carrying handle 21 is secured to the base section at a location adjacent to the towing handle location. A second suitcase carrying handle 22 is secured to the base portion, this latter handle being on the longer wall 6.

As will be noted from the Figures 1 to 6, the side walls of the base portion and the
20 lid portion are curved inwardly as particularly shown in Figures 5 and 6.

In addition, the central sections of the larger face 3 of the base portion 1 and the larger face 8 of the lid portion are raised relative to the remainder of the associated larger face. The larger face of the base portion 1 is additionally provided with a plurality of raised rib formations 3A in the region of the wheel
25 housings 18.

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Furthermore as may be noted from Figures 1 and 2 the larger face of the base portion 1 is inwardly curved.

Also the walls of the base portion in the vicinity of the handles 21 and 22 are countersunk so as to provide space for the fingers of the user when using the
5 handles.

- One of the functions of the raised and curved formations of the base and the lid portions is to provide for additional strength of the base and the lid portions since the provision of such formations is effective for stiffening of the larger areas of the suitcase to reduce flexure in use.
- 10 In addition the curved formation of the base and lid portions without changes in the wall thickness, and therefore weight variation enables these portions to be ergonomically enhanced as compared with the traditional purely rectangular flat surfaces construction.

In practice the utilisation of the curved formation as shown in the Figures has
15 been found to enhance the handling of the case by a user. For example the lengthways curving of the base surface 3 leads to more comfortable handling whilst the case is being carried using the handle 22.

It will be appreciated that the provision of a carrying handle implies that a person carrying the suitcase by way of the handle will for what ever reason from time to
20 time set the case down into the floor/ground.

As a consequence of this in order to avoid damage and/or disfigurement to the suitcase the suitcase is provided with support elements which are intended to support the actual base and lid portions away from floor/ground contact.

In the case of the carrying handle 21 a support bar 23 is provided on the end wall 12 of the lid portion, the support bar being shaped as shown in Figure 5.. This bar is so dimensioned such that when the suitcase is oriented as shown in Figures 1 and 2 the suitcase is supported in a generally vertical setting .

- 5 In the case of the carrying handle 22 a group of four support elements 24 are provided, two on the side wall 3 of the base portion and two on the wall 10 of the lid portion.

- Figures 7 and 8 illustrate a modified construction of the suitcase shown in the Figures 1 to 6. The construction of the suitcase of Figures 7 and 8 is generally 10 similar to that of the Figures 1 to 6. The essential differences is that the suitcase of Figures 7 and 8 is provided with the facility of expandability in volume.

- This expandability is achieved by providing an additional double Zip fastener arrangement 25. One of the tooth strips/sections 25A of the fastener arrangement 25 is stitched to the lid portion 2. The other toothed strip/section 25B of the 15 fastener arrangement is attached to the section of the fastener arrangement 16 associated with toothed strip 16B. Conveniently a beading/piping is interposed between the strip 16B and the section 25B, the latter serving to enhance appearance to provide a degree of stiffness around the case in the vicinity of the Zips 16 and 25.A flexible band or gusset 26 is provided between the toothed strips 20 25A and 25B of the fastener arrangement 25. The provision of this gusset enables the lid portion 2 to be bodily moved away from the base portion to an extent defined by the width of the gusset 26..

- With this arrangement when both the Zip fastener arrangement 16 and the Zip fastener arrangement 26 are both in their closed positions as shown in Figure 7 25 the suitcase is set to its minimum volume and is in its closed condition.

When the Zip fastener arrangement 16 is closed as is shown in Figure 8 and the zip fastener arrangement 25 is open as is schematically indicated in Figure 8 the lid portion is bodily movable away from the base portion by a distance defined by the width of the gusset 26 to increase the overall volume of the case whilst the case remains closed.

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- Bearing in mind that the material forming the Zip fastener sections/strips is conventionally a woven material it has been appreciated that for the purposes of avoidance of damage to the woven material in the vicinity of the regions thereof that are stitched to the base and lid portions 1 and 2 and additionally to enhance
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- the appearance of the suitcase those regions of the Zip fasteners strips/sections that are involved in the stitching process are covered by a cover strip 30 (Figure 9) that is secured to the associated base and lid portions 1 and 2 by the stitching operation involved in securing the associated Zip fastener section/strip to the base and lid sections of the case.
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- As shown in Figure 9, the cover strip 30 is formed by an generally compressed S cross-sectioned plastics material strip 31 providing an outer layers 32 and 34 and a central layer 33. The layers 32 and 33 combine to form a U recess into which is inserted the rim region of the bottom section 1 or that of the lid section 2. The layers 33 and 34 combine to form a second recess facing opposite direction to the first mentioned recess. The associated section/strip (16A, 16B or 16A, 25A) of the Zip fastener arrangements 16 and 25 is located within this second recess. With this arrangement layer 34 of plastics material overlies the associated Zip fastener section/strip and effectively hides the Zip fastener portion involved from view and gives additional strength to the stitching of the Zip fastener in place by
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- the line of stitching 35.

It will be appreciated that closure of the Zip arrangement 25 will draw the lid portion 2 towards the base section 1 and thus reduce the overall case volume to that defined by the shaping of the base and lid portions.

If it is desired to provide for a double expansion of the volume of the overall 5 volume of the case the base portion can be achieved by providing a further Zip Fastener arrangement (not shown) between the fastener arrangements 16 and 25.

In this construction the case will incorporate three Zip formations, two associated with the expandability of the case and the third associated with the opening and closing of the case.

10 The utilisation of a material to form the base and lid portions that retain their body shape whilst being capable of being stitched to Zip fastener arrangements has enabled the elimination of internal framing such as conventionally incorporated in the forms of 'hard' cases and has also enabled the elimination of the need for relatively heavy mechanical case locking arrangements together with heavy 15 tongue and groove features conventionally used with the so-called 'hard' cases. This combination has effectively resulted in a hard case construction with significant reduction in weight as compared with equivalently sized conventional 'hard' case.

In addition, it will be appreciated that the construction proposed by the present 20 invention has enabled the introduction of the feature content volume expansion into a hard case construction.

It has been found that the case construction as above discussed has resulted in a case construction that has been found easier to handle as compared with equivalent sized 'hard' cases.